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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/970,847	10/04/2001	Michael Pearson	33981US1	1640

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EXAMINER

JERABEK, KELLY L

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/970,847	Applicant(s) PEARSON, MICHAEL	
	Examiner Kelly L. Jerabek	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-19 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 1-3, 6 and 7 is/are allowed.
6) ☒ Claim(s) 8-19 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 21 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/25/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 3/21/2005 have been fully considered but they are not persuasive.

Response to Remarks:

Applicant's arguments (Amendment page 12 (1)) state that the Guidash reference fails to teach how two distinct rows can be reset substantially simultaneously for different lengths of time. However, the claims do not recite this feature and therefore the argument is moot.

Applicant's arguments (Amendment page 12 (2)) state that the Guidash reference teaches a specific pixel architecture and a method utilizing it to accomplish the rolling-shutter double-sample read and the present invention is far more robust. However, the limitations of the claims as written are met by the combination of the Applicant's admitted prior art and the Guidash reference.

Applicant's arguments (Amendment page 12 (3)) state that the second reset for the Guidash reference occurs during the second row read, not during the read of the

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present row. However, the claims do not require that the second reset occurs during the read of the present row therefore the argument is moot.

Applicant's arguments (Amendment page 12 (4)) state that the Guidash reference fails to teach or infer an apparatus having a double sample control circuit as defined by independent claims 8, 9, and 12. However, the combination of the applicant's admitted prior art and the Guidash reference as set forth in the 103 rejection of the previous office action meets all of the limitations of the claims.

Applicant's arguments (Amendment page 12 (5)) state that the Guidash reference fails to teach or infer the key aspect of the present invention, tying the activation of the second reset signal to the row activation signal as defined in independent claims 8, 9, and 12. The Examiner respectfully disagrees. Independent claims 8, 9, and 12 do not mention a row activation signal. Instead claims 8 and 9 refer to an element access signal and claim 12 refers to a row access signal. The Examiner is reading the "Readout Row" signal of figure 3 of Guidash as the element access signal of claims 8 and 9 and the row access signal of claim 12. Guidash states that following the "Readout Row" signal, the row is deselected (second reset signal) (col. 3, line 45 – col. 4, line 19). Therefore, it can be seen that the second reset signal disclosed by Guidash is responsive to an element access/ row access signal ("Readout Row").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-19 rejected under 35 U.S.C. 103(a) as being anticipated by the Applicant's admitted prior art in view of Guidash US 6,218,656.

Re claims 8, 9, and 12, the applicant's conceded prior art discloses a method of controlling light sensitive elements arranged in rows and columns in an image sensor comprising the steps of: initially resetting a light sensitive element during a reset time (t_{RESET}), reading the light sensitive element after an integration time (t_{INT}), during a read time (t_{READ}) and resetting the light sensitive element a second time during a portion of the read time (t_{READ}) (fig. 5; specification: page 4, lines 1-21). However, the applicant's admitted prior art states that the read circuitry associated with the array (609) cannot necessarily perform a double sampling reset. For example, the second reset (502,504,506) on an earlier row may not be possible because a later row may be using

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that address to perform a pre-integration reset (503,505,507) (specification: page 5, lines 15-21).

Guidash discloses in figure 3 a timing diagram of the operation of 3-transistor pixels of a CMOS active pixel sensor device capable of performing correlated double sampling.

The pixel operation described takes place for an entire row of pixels (10) in a rolling shutter operation of CMOS active pixel sensor devices (col. 3, lines 30-37). According to the timing diagram shown in figure 3, each row (i-2, i-1, i, i+1) has an initial reset period (select row), an integration period, a readout period, and a second reset period (deselect row) (col. 3, line 45 – col. 4, line 39). The Examiner is reading the “Readout Row” signal of figure 3 of Guidash as the element access signal of claims 8 and 9 and the row access signal of claim 12. Guidash states that following the “Readout Row” signal, the row is deselected (second reset signal). Thus, it can be seen that the second reset signal disclosed by Guidash is responsive to an element access/ row access signal (“Readout Row”). Also, it can be seen in figure 3 that there is a delay (t_{ROW}) between the selection (reset) of one row and the deselection (second reset) of the previous row (example: delay between deselection of row (i-1) and selection of row (i)). Thus, Guidash discloses sequentially resetting each successive row of light sensitive elements after a time period (delay between deselection of row (i-1) and selection of row (i)). Therefore, it would have been obvious for one skilled in the art to have been motivated to include the timing of the 3-transistor photodiode pixel for providing a CDS output signal as disclosed by Guidash in the rolling shutter technique disclosed by applicant’s admitted prior art figure 5. Doing so would provide a means for deselecting

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a row following the readout of that row and selecting a subsequent row following the deselection of the previous row (Guidash: col. 3, line 65 – col. 4, line 12).

Re claims 10-11 and 13-14, and 18-19, the applicant's conceded prior art includes a 3-transistor CMOS sensor array (609) (fig. 6; specification: page 4, lines 25-27).

Re claims 15 and 17, the frame read sequence disclosed by figure 5 of the applicant's admitted prior art is achieved by addressing row reset and read lines independently with the use of two separate counters (610,611). Reset decoder (605), reset driver (612), row decoder (606), and row driver (613) all operate in order to generate the frame read sequence according to figure 5 (specification: page 4, line 23 – page 5, line 10). However, the applicant's admitted prior art fails to distinctly state that the reset decoder (605), reset driver (612), and row driver (613) include NAND gates and amplifiers and row decoder (606) includes an AND gate. However, the Examiner takes **Official Notice** that it is well known in the art to use NAND gates, AND gates, and amplifiers to generate reset and row access signals during readout. Therefore, it would have been obvious for one skilled in the art to have motivated to include NAND gates, AND gates, and amplifiers in the row and reset decoders and row and reset drivers disclosed by the applicant's admitted prior art.

Re claim 16, the applicant's conceded prior art includes reset drivers (612) coupled to a reset control circuit (605) and row access drivers (613) coupled to a row access decode circuit (606) (fig. 6; specification: page 4, line 23 – page 5, line 2).

Allowable Subject Matter

Claims 1-3 and 6-7 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fail to anticipate or render obvious the following technical features as recited in the highlighted claims:

Referring to claims 1-3 and 6-7, the prior art fails to teach or suggest a method for controlling a light sensitive element arranged in an image sensor comprising the steps of: ...resetting the light sensitive elements in the given row a second time during a portion of the read time; wherein the time period (t_{ROW}) is greater than or equal to either (t_{READ}) or ($t_{\text{READ}} + t_{\text{HB}}$).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Contacts


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly L. Jerabek whose telephone number is **(571) 272-7312**. The examiner can normally be reached on Monday - Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on **(571) 272-7308**. The fax phone number for submitting all Official communications is 703-872-9306. The fax phone number for submitting informal communications such as drafts, proposed amendments, etc., may be faxed directly to the Examiner at **(571) 273-7312**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KLJ


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